

2020 SWPPP

**Construction Stormwater General Permit (CSWGP)
Stormwater Pollution Prevention Plan
(SWPPP)**

for
**Electron Hydro. Diversion Repair, Spillway Replacement
and Bank Protection**

Prepared for:
The Washington State Department of Ecology
Southwest Regional Office
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Permittee / Owner	Developer	Operator/Contractor
Electron Hydro, LLC	Electron Hydro, LLC	Electron Hydro, LLC

The project site is located approximately 25 miles southeast of Orting, Washington along the Puyallup River. Site Location is as follows:

Latitude: 46° 54' 18"N
Longitude: 122° 02' 18"W

Certified Erosion and Sediment Control Lead (CESCL):

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SWPPP Prepared By:

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SWPPP Preparation Date

5/7/2017, revised 2018, 2019, 2020 & 10/2020

Project Construction Dates

Activity / Phase	Start Date	End Date
Construction	August 15, 2018	October 30, 2021

Diversion Repair, Spillway Replacement and Bank Protection

Project Engineer Certification: I hereby state that this Construction Stormwater Pollution Prevention Plan for the Diversion Repair, Spillway Replacement and Bank Protection has been prepared by me or under my supervision and meets the standard of care and expertise which is usual and customary in this community for professional engineers. I understand that Pierce County does not and will not assume liability for sufficiency, suitability, or performance of Construction SWPPP BMPs prepared by me.

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B. BMP Detail

C. Correspondence

D. Site Inspection Form

E. Construction Stormwater General Permit (CSWGP)

List of Acronyms and Abbreviations

Acronym / Abbreviation	Explanation
303(d)	Section of the Clean Water Act pertaining to Impaired Waterbodies
BFO	Bellingham Field Office of the Department of Ecology
BMP(s)	Best Management Practice(s)
CESCL	Certified Erosion and Sediment Control Lead
CO ₂	Carbon Dioxide
CRO	Central Regional Office of the Department of Ecology
CSWGP	Construction Stormwater General Permit
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved Oxygen
DOE	Washington State Department of Ecology
Ecology	Washington State Department of Ecology
ECY	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
ERO	Eastern Regional Office of the Department of Ecology
ERTS	Environmental Report Tracking System
ESC	Erosion and Sediment Control
GULD	General Use Level Designation
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Units
pH	Power of Hydrogen
RCW	Revised Code of Washington
SWRO	Southwest Regional Office
SPCC	Spill Prevention, Control, and Countermeasure
su	Standard Units
SWMMEW	Stormwater Management Manual for Eastern Washington
SWMMWW	Stormwater Management Manual for Western Washington
SWPPP	Stormwater Pollution Prevention Plan
TESC	Temporary Erosion and Sediment Control
SWRO	Southwest Regional Office of the Department of Ecology
TMDL	Total Maximum Daily Load
VFO	Vancouver Field Office of the Department of Ecology
WAC	Washington Administrative Code
WSDOT	Washington Department of Transportation
WQMP	Water Quality Monitoring Plan
WWHM	Western Washington Hydrology Model

1. Project Information

Project/Site Name: Diversion Repair, Spillway Replacement and Bank Protection

Street/Location: 30020 Lookup RD E

City: Orting **State:** WA **Zip code:** 98360

Subdivision: NA

Receiving waterbody: Puyallup River

The proposed site is located approximately 25 miles southeast of Orting, WA. A site vicinity map and coordinates are provided in Appendix A. The site is approximately 30 acres in size and includes two one-story buildings, three above ground propane tanks, a water storage tank, and other fixtures to support an operating hydro-electric facility. The area to be disturbed for this project is approximately 4.5 acres, within 200 feet of the Puyallup River and about 5.5 acres up land. Puyallup River at River Mile (RM) 41.7; 46° 54.35' north latitude and 122° 2.38' west longitude; Section 3, T 16N R 6E.

1.1. Existing Conditions

Total acreage (including support activities such as off-site equipment staging yards, material storage areas, borrow areas).

Total acreage:	30 acres	Parcels involved
Disturbed acreage:	10 acres	land used for work and storage
Existing structures:	300 sq. ft	
Landscape Topography:	0.0 acres	
Drainage patterns:	51.4 acres	off-site and on-site
Existing Vegetation:	20 acres	Including on-site only)
Critical Areas:	6 acres	of slopes adjacent to flume

There are no known impairments for 303(d) or Total Maximum Daily Load (TMDL) for the receiving waterbody:

The topography of the site uplands and the along the river entrenchment has mild gentle slopes. Between the two are steeper short slopes. These slopes run along flume to the west (left) side and drop about 30' to valley floor. The riverbanks are manmade and have been maintained since 1903 to allow access, maintenance, and operation of the facility. Surficial soils consist of 10 – 15 feet of cobbles and gravels which underlain by a deep layer of sands, gravels, and a relatively deep deposit fine sand. In the manmade areas behind the banks upstream and downstream buried large rocks with voids from the early bank construction. The site is very well

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drained with most runoff infiltrating to the groundwater that lies approximately 5-15 feet below the surface, on the top of the fine sand layers.

Critical areas might be the west river valley slopes along which the flume runs. The slopes a portion of which might be manmade are not to be disturbed by the work. The conversion of a portion of the access road to a park like area will include stabilization and planting. The upper half of the access road drains to an established and maintained bio-treatment facility where the runoff infiltrates. There is no longer a functioning discharge to the river. All drainage paths on the site will identified and if necessary, BMP's installed to prevent illicit discharges to the river, this will require walking the site during the rainy season. All BMP's will be monitored, revised to fit conditions, and maintained.

The prepared logging road and landing area are within the work area has been reworked to provide a temporary work and staging of equipment and materials outside the shoreline area. These areas are included in the construction site for erosion control and stabilization.

1.2. Proposed Construction Activities

Description of Site Development:

The project is the replacement of the wood diversion and a portion of the spillway with a concrete spillway, air bladder, abutments, and bank stabilization. For the work, a cofferdam and temporary lined channel will be constructed to divert the river to the east side and maintain the fish ladder. Then a portion of the wood diversion and spillway will be demolished, excavation will be done, concrete formed and poured. After which the air bladder will be installed, and bank stabilization will be completed.

Description of Construction Activities:

Site preparation has included:

1. Re-grading of the temporary landing work and storage area.
2. Placement of crushed rock on all surfaces of the landing, roads, and other access areas.
3. Installation of TESC measures required to stabilize the site.
4. Installation of a temporary water tank and portable concrete patch plant.
5. Installation of a new lower control house with concrete foundation.
6. Divert River to west side, install cofferdam and divert river to east side.
7. Demolition of the existing spillway.
8. Excavate and dewater west portion of river to foundation level.
9. Form east foundation and wall and pouring of concrete.
10. Strip forms install connection east wood spillway and backfill east side.
11. Install temporary rock spillway between east foundation and wall and existing west wall.
(steps will vary to finish)
12. Divert river to west side, and remove cofferdam
13. Rebuild cofferdam upstream and downstream of east wall
14. Divert river to east side

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15. Remove temporary rock spillway
16. Install rock along river bottom upstream and downstream. (steps will vary to finish)
17. Installing rubber bladder and operational piping for the inflation system.
18. Placing riprap for the upstream and downstream to tie into bank stabilization measures.
19. The schedule and phasing of BMPs during construction is shown in Element 12.

Water Quality and Monitoring Plan has been developed and is included by reference.

Stormwater runoff volumes were calculated using the Western Washington Hydrology Model (WWHM). After the project is constructed and all new utilities are installed the disturbed areas will be seeded and stabilized.

Description of site drainage including flow from and onto adjacent properties:

The site had no discharge points from land to the river until the 2019 work completed in the river. The sediment basin discharges to the river. A second point of discharge is a swale from the work area direct water downstream to spread and infiltrate into the river gravels, this will be monitored for condition. These sampling points have been added to the plan. All other runoff is contained on the site or directed into the flume with no natural discharges.

Description of final stabilization (example: extent of revegetation, paving, landscaping):

All disturbed areas will be either revegetated or become gravel surfaced.

2. Construction Stormwater Best Management Practices (BMPs)

The SWPPP is a living document reflecting current conditions and changes throughout the life of the project. These changes may be informal (i.e., hand-written notes and deletions). Update the SWPPP when the CESCL has noted a deficiency in BMPs or deviation from original design.

2.1. The 13 Elements

2.2. Element 1: Preserve Vegetation / Mark Clearing Limits

To protect adjacent properties and to reduce the area of soil exposed to construction, the limits of construction will be clearly marked. Trees that are to be preserved shall be clearly delineated, both in the field and on the plans. In general, natural vegetation and native topsoil shall be retained in an undisturbed state to the maximum extent possible.

Area are already graded and gravels or surfaces with crushed rock or gravel traffic and work should be maintained in these areas as part of normal maintenance.

List and describe BMPs:

BMP C101: Preserve Natural Vegetation-

Clumps of trees within the area will be delineated with flagging for protection. The construction boundaries along the river will be marked with flagging and gravel surfacing. Gravel will be placed outside of the dripline for the trees that are to be protected and saved. All parking and staging areas will be graveled surfaced prior to use and to protect the natural vegetation.

BMP C102: Buffer Zone:

A buffer zone or strip will be installed along the riverbank to protect the existing shoreline. Buffer zone will be flagged and surfaced with gravel as described above.

BMP C103: High Visibility Marking:

Bright colored, high visibility flagging will be installed as shown on the site drawings. The flagging will delineate the boundaries of the existing vegetation and the edge of the existing gravel surfacing. No vehicle will travel beyond the edge of the gravel surface. A different color of flagging will be used to clearly delineate the site clearing.

Installation Schedules: August 2018 and each construction period.

Inspection and Maintenance plan: The fencing areas will be inspected regularly. Any deficiencies will be repaired or replaced to restore the visibility.

Responsible Staff: Lead CESCL or Site Engineer.

2.3.Element 2: Establish Construction Access

Construction access is in place and gated. All roads are already graveled surfaced and sloped to drain to existing side ditches. Rock ramps will be constructed down to the river bottom in 2 locations as shown on the plans.

The road is over 10 miles for dirt and gravel roads, so no entrance is needed for the site but a stable ramp into the river bed is necessary made with quarry spalls. An area to clean vehicles should be provided to inspect and clean equipment if necessary.

List and describe BMPs:

BMP C105 Stabilized Construction Entrance / Exit:

Construction vehicle access and exit shall be limited to one route if possible, or two for linear projects such as roadways where one access is necessary for large equipment maneuvering.

BMP C107: Construction Road/Parking Area Stabilization:

Roads and parking areas shall make use of previously disturbed and graveled areas. These include existing gravel travel ways and the graveled yard areas.

Installation Schedules: August 2018 and each construction period after in 2019, 2020

Inspection and Maintenance plan: Inspect weekly to ensure that gravel is still in place without significant pothole or depressions. Re-grade and backfill with crushed gravel as needed.

Responsible Staff: Lead CESCL or Site Engineer

2.4.Element 3: Control Flow Rates

Will you construct stormwater retention and/or detention facilities?

☐Yes ☒No

Will you use permanent infiltration ponds or other low impact development (example: rain gardens, bio-retention, porous pavement) to control flow during construction?

☐Yes ☒No

List and describe BMPs:

The site had no points of discharge from land until the creation of a temporary sediment pond which discharges to the river. In the river is a conveyance channel that will be sampled and discharged depending on the level of turbidity. Refer to Water Quality Monitoring Plan for procedure and sampling plan. This will be sourced from groundwater.

BMP C207: Check Dams:

_Construct small dams across swales or ditches to reduce erosive forces of flow and detain water to allow settling of large particles. This method is used in the conveyance ditch before pumping into woods. Check dams on the ditch running downhill next to the road are necessary to slow and protect the pipe inlet to the manhole. Tentative locations of these check dams are shown on the site plans with spacing so top of dam is at the elevation of the bottom of the upstream dam.

BMP C209 Outlet Protection:

Outlet protection is required at the outlets off all ponds, pipes, ditches, or other conveyances, and where runoff is conveyed to a natural or manmade drainage feature such as a stream, wetland, lake, or ditch.

BMP C235 Wattles:

Temporary erosion and sediment control barriers consisting of straw, compost, or other material that is wrapped in biodegradable tubular plastic or similar encasing material. Wattles are placed in shallow trenches and staked along the contour of disturbed or newly constructed slopes.

Installation Schedules: August 2018 and September 2020

Inspection and Maintenance plan: Weekly inspection and after rainfall events. Correct and damage and replace as needed.

Responsible Staff: Lead CESCL or Site Engineer

2.5.Element 4: Install Sediment Controls

Sediment control may be necessary in any dewatering ditches and on steep slopes. Silt fence will mostly be used to pond water and check dams to allow filtering and settling. Wattles may be used on some slopes, primary method will be to prevent soil impact and sediment movement

List and describe BMPs:

BMP C233: Silt Fence:

_Install as shown on the drawings. Silt fencing shall be used downslope of all disturbed areas. Filter fabric and fencing shall conform to WSDOT and Pierce County Standards.

BMP C207: Check Dams:

_Construct small dams across swales or ditches installed as part of the work to reduce the velocity of concentrated flow and dissipate energy. Check dams may be needed near the existing maintenance building to control the flow of runoff. Tentative locations of these check dams are shown on the site plans.

BMP C235 Wattles:

Temporary erosion and sediment control barriers consisting of straw, compost, or other material that is wrapped in biodegradable tubular plastic or similar encasing material. Wattles are placed in shallow trenches and staked along the contour of disturbed or newly constructed slopes.

Installation Schedules: August,2018 and September 2020

Inspection and Maintenance plan: Inspect weekly and maintain as needed.

Responsible Staff: Lead CESCL or Site Engineer

2.6. Element 5: Stabilize Soils

Disturbed areas of the project will be stabilized by covering with gravel or wood fibrous or mulch and then temporarily seeded. All laydown areas shown on the site drawings are covered with gravel or crushed rock for work or equipment and materials storage. These slopes will be temporarily seeded so they are not left exposed longer than seven days.

Soil stockpiles for the project on land will be provided toe of slope dispersal features. During the summer months, the gravel surfacing may require periodic watering to reduce and control the dust.

Soil compaction will be minimized restricting equipment movement, material storage and parking to the designated gravel surfaced areas as shown on the site plans. Buffer zones will be established to preserve and protect the existing vegetation from being disturbed.

West of the Cascade Mountains Crest

Season	Dates	Number of Days Soils Can be Left Exposed
During the Dry Season	May 1 – September 30	7 days
During the Wet Season	October 1 – April 30	2 days

Soils must be stabilized at the end of the shift before a holiday or weekend if needed based on the weather forecast.

Anticipated project dates: Start date: August 1, 2018

End date: October 28, 2020

Will you construct during the wet season?

☒ Yes ☒ No

List and describe BMPs:

BMP C120: Temporary and Permanent Seeding

-Utilize temporary and permanent seeding as required to stabilize disturbed areas. Temporary seeding shall be used when seeds are applied outside of the optimum seeding window. The optimum seeding window is April 1 through July 30 and September 1 to October 1. Rough the surface before applying the seed mixture. Apply seed mixture at a rate of 1500 pounds per acre and cover with straw mulching after the application. Use the following seed mixture for the project.

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	% Weight	% Purity	% Germination
Redtop or Oregon bentgrass (<i>Agrostis alba</i> or <i>Agrostis oregonensis</i>)	20	92	85
Red fescue (<i>Festuca rubra</i>)	70	98	90
White dutch clover (<i>Trifolium repens</i>)	10	98	90

Installation Schedules: August 2018 and October 2019 and September 2020

Inspection and Maintenance plan: Inspect weekly and maintain as needed.

Responsible Staff: Lead CESCL or Site Engineer

Mulch

Gravel will need new BMP or rock surface.

BMP C140: Dust Control:

Sprinkle and water the graveled surfaced roads as needed to minimize dust.

Installation Schedules: August 2018 –October 2020

Inspection and Maintenance plan: Re-spray area as needed to reduce dust and maintain as needed.

Responsible Staff: Lead CESCL or Site Engineer

2.7.Element 6: Protect Slopes

Steep slopes for the cut and fill embankments on the project are in the river. Slopes are currently covered in sand and rock with little or no vegetation. The adjacent ground it level or should be graded away from the slopes. If necessary, wattles will be placed along the top of all steep slopes and on slopes to prevent concentration of water. Roadside slopes or riverbanks are to be covered with crushed rock and river aggregate to prevent impact from rain. The bank stabilization requires the riverbanks to be rebuilt as part of the construction on the west (left) bank of the river.

Will steep slopes be present at the site during construction?

☒Yes ☐No

There are steep banks of river at the OHWL and above. There are slopes along the western edge forming the river valley. of the upland flat topography slopes along the river

List and describe BMPs:

BMP C120: Temporary and Permanent Seeding:

Utilize temporary and permanent seeding as required to stabilize disturbed areas. Temporary seeding shall be used when seeds are applied outside of the optimum seeding window. The optimum seeding window is April 1 through July 30 and September 1 to October 1. Rough the surface before applying the seed mixture. Apply seed mixture at a rate of 1500 pounds per acre and cover with straw mulching after the application. Use the following seed mixture for the project.

	% Weight	% Purity	% Germination
Redtop or Oregon bentgrass (<i>Agrostis alba</i> or <i>Agrostis oregonensis</i>)	20	92	85
Red fescue (<i>Festuca rubra</i>)	70	98	90
White dutch clover (<i>Trifolium repens</i>)	10	98	90

BMP C121: Mulching:

Mulching soils provides immediate temporary protection from erosion. Mulch also enhances plant establishment by conserving moisture, holding fertilizer, seed, and topsoil in place, and moderating soil temperatures. There is an enormous variety of mulches that can be used.

Straw

Cost-effective protection when applied with adequate thickness. Hand-application generally requires greater thickness than blown straw. The thickness of straw may be reduced by half when used in conjunction with seeding. In windy areas straw must be held in place by crimping, using a tackifier, or covering with netting. Blown straw always has to be held in place with a tackifier as even light winds will blow it away. Straw, however, has several deficiencies that should be considered when selecting mulch materials. It often introduces and/or encourages the

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propagation of weed species and it has no significant long-term benefits. It should also not be used within the ordinary high-water elevation of surface waters (due to flotation).

Wood-based Mulch or Wood Straw:

This material is often called "hog or hogged fuel." The use of mulch ultimately improves the organic matter in the soil. Special caution is advised regarding the source and composition of wood-based mulches. Its preparation typically does not provide any weed seed control, so evidence of residual vegetation in its composition or known inclusion of weed plants or seeds should be monitored and prevented (or minimized).

BMP C207: Check Dams:

Construct small dams across swales or ditches installed as part of the work to reduce the velocity of concentrated flow and dissipate energy. Check dams may be needed near the existing maintenance building to control the flow of runoff. Tentative locations of these check dams are shown on the site plans.

BMP C235 Wattles:

Temporary erosion and sediment control barriers consisting of straw, compost, or other material that is wrapped in biodegradable tubular plastic or similar encasing material. Wattles are placed in shallow trenches and staked along the contour of disturbed or newly constructed slopes.

BMP C122 Nets and Blankets:

To aid permanent vegetated stabilization of slopes 2H:1V or greater and with more than 10 feet of vertical relief. For drainage ditches and swales (highly recommended). The application of appropriate netting or blanket to drainage ditches and swales can protect bare soil from channelized runoff while vegetation is established. Nets and blankets also can capture a great deal of sediment due to their open, porous structure. Nets and blankets can be used to permanently stabilize channels and may provide a cost-effective, environmentally preferable alternative to riprap. One-hundred percent synthetic blankets manufactured for use in ditches may be easily reused as temporary ditch liners.

Installation Schedules: August 2018 and October 2019 and September 2020

Inspection and Maintenance plan: Inspect weekly and maintain as needed.

Responsible Staff: Lead CESCL or Site Engineer

2.8. Element 7: Protect Drain Inlets

Inlet protection is needed in one known location for the water tank overflow pond outlet pipe. This pipe enters a manhole where it is discharged into the flume intake or currently the conveyance ditch it has a secondary inlet at the manhole that will need protection, likely check dams. A second inlet is in the sediment trap to allow water to flow into the sedimentation pond, it is to be blocked.

List and describe BMPs:

BMP C220: Storm Drain and Inlet Protection:

Prevents coarse sediment from entering drainage systems prior to permanent stabilization of the disturbed area. Use at inlets that are operational before permanent stabilization of the disturbed drainage area. Provide protection for all storm drain inlets downslope and within 500 feet of a disturbed or constructed area, unless conveying runoff entering catch basins to a sediment pond or trap.

BMP C207: Check Dams:

_Construct small dams across swales or ditches installed as part of the work to reduce the velocity of concentrated flow and dissipate energy. Check dams may be needed near the existing maintenance building to control the flow of runoff. Tentative locations of these check dams are shown on the site plans.

BMP C235: Wattles:

Temporary erosion and sediment control barriers consisting of straw, compost, or other material that is wrapped in biodegradable tubular plastic or similar encasing material. Wattles are placed in shallow trenches and staked along the contour of disturbed or newly constructed slopes.

BMP C233: Silt Fence:

_Install as shown on the drawings. Silt fencing shall be used downslope of all disturbed areas. Filter fabric and fencing shall conform to WSDOT and Pierce County Standards.

Installation Schedules: August 2018 and October 2019 and September 2020

Inspection and Maintenance plan: Inspect weekly and maintain as needed.

Responsible Staff: Lead CESCL or Site Engineer

2.9.Element 8: Stabilize Channels and Outlets

The interceptor swale put in use has been planned use with one of the dewatering options. The flow exceeds a Type IA, 10-year 24-hour storm. The channel slope is flat and the velocities have to be lower than 3 feet per second so check dams have, are, and will be installed to maintain low velocities. Silt fencing and wattles will be used on the flatter disturbed slopes to prevent erosion and sediment transport. The channel discharges to a sediment pool that will be pumped to a forested floor duff and will be distributed through a hose sprinkler system to allow for infiltration, this sprinkler system will reduce concentrated water flow and prevent erosion of forested floor.

Provide stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent stream banks, slopes, and downstream reaches, will be installed at the outlets of all conveyance systems.

List and describe BMPs:

BMP C207: Check Dams:

Construct small dams across swales or ditches installed as part of the work to reduce the velocity of concentrated flow and dissipate energy. Check dams may be needed near the existing maintenance building to control the flow of runoff. Tentative locations of these check dams are shown on the site plans.

BMP C233: Silt Fence:

Install as shown on the drawings. Silt fencing shall be used downslope of all disturbed areas. Filter fabric and fencing shall conform to WSDOT and Pierce County Standards.

BMP-C209 Outlet Protection:

Outlet protection is required at the outlets off all ponds, pipes, ditches, or other conveyances, and where runoff is conveyed to a natural or manmade drainage feature such as a stream, wetland, lake, or ditch.

BMP C236: Vegetated Filtration:

Water is distributed over the existing forest floor duff or vegetated ground to allow vegetation filtration and infiltration. Monitoring is required to verify runoff is not generated and is used with level spreaders and sediment traps.

Modified detail: Using sprinkler hose for increased distribution of water over existing forest floor duff or vegetated ground to reduce concentration of water flow and increase time for infiltration.

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BMP C235: Wattles:

Temporary erosion and sediment control barriers consisting of straw, compost, or other material that is wrapped in biodegradable tubular plastic or similar encasing material. Wattles are placed in shallow trenches and staked along the contour of disturbed or newly constructed slopes.

Installation Schedules: August 2018 and September 2020

Inspection and Maintenance plan: Weekly inspection and after rainfall events. Correct and damage and replace as needed.

Responsible Staff: Lead CESCL or Site Engineer

2.10. Element 9: Control Pollutants

The following pollutants are anticipated to be present on-site:

Table 1 – Pollutants

Pollutant (List pollutants and source, if applicable)
Cement – product to make on site concrete
Concrete - concrete to be used on the bladder foundation and walls.
Diesel – fuel for heavy equipment.
Hydraulic Fluid – heavy equipment pressure systems
Field Turf – temporary cushion support for cofferdam HDPE liner

Fueling of vehicles will occur in the designated fueling area which has an above ground double walled tank and a containment pad to collect any spills. Vehicle maintenance and servicing will occur in a designated area in the upper laydown yard. All hydraulic fluid will be fish friendly.

List and describe BMPs:

BMP C151: Concrete Handling:

Pump and discharge unused concrete near the concrete washout area. Wash all concrete tools and equipment in accordance with BMP C154.

Forms shall be sealed to prevent release of cement and other materials to the river.

BMP C154: Concrete Washout Area:

Provide a lined plastic pit for the concrete washpit. Locate and construct as shown on the drawings. Water in the pit will be re-used as needed and decanted as needed. The pH of the water (BPM 252) will be adjusted before discharging to the existing vegetation to infiltrate into the site. Solid pieces of concrete will be periodically removed and disposed in a rollover container and then sent to a approved disposal facility.

Temporary Fuel Tank and splash pad.

Spill Control Plan see BMP-SP1 for company general spill control procedures.

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BMP X-1000: Removal of Field Turf:

Procedure detail for removal refer to Electron Hydro Diversion Repair and Spillway Replacement Project Material Removal plan, prepared by Shane Cherry Consulting.

Installation Schedules: August 2018 -- October 2020

Inspection and Maintenance plan: Inspect daily when concrete is being poured and when materials are delivered to the site.

Responsible Staff: Lead CESCL or Site Engineer

Will maintenance, fueling, and/or repair of heavy equipment and vehicles occur on-site?

☒ Yes ☐ No

If yes, describe spill prevention and control measures in place while conducting maintenance, fueling, and repair of heavy equipment and vehicles.

Fueling of heavy equipment will be done onsite at the designated area shown on the plans. All deliveries and dispensing of fuel will be supervised.

If yes, also provide the total volume of fuel on-site and capacity of the secondary containment for each fuel tank. Secondary containment structures shall be impervious.

Fuel tank to be used in 6,000 gallons and the tank is dual walled. The fueling pad is gravel over an impervious surface with a drip pad under the outlet pipe.

List and describe BMPs:

BMP C153: Material Delivery, Storage and Containment:

Utilize onsite storage areas for receiving materials to the site. All petroleum materials shall be kept in a dual walled container or on a spill/drip pallet. Do not store any hazardous waste on site. Supervise all material transfers including fuel and cement deliveries. Maintain MSDS for all materials stored on site. Keep a spill kit near the fueling station, the project admin office, at the existing control building near river body.

Installation Schedules: August 2018

Inspection and Maintenance plan: Inspect weekly and when materials are received.

Responsible Staff: Lead CESCL, list provided as part of the WQMP or Site Engineer

Will wheel wash or tire bath system BMPs be used during construction?

☐ Yes ☒ No

If yes, provide disposal methods for wastewater generated by BMPs.

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Will pH-modifying sources be present on-site?

REFER TO THE WATER QUALITY AND MONITORING PLAN DEVELOPED FOR MEASURING TURBIDITY, PH, AND MOVEMENT OF WATER.

☒ Yes ☐ No

If yes, check the source(s).

Table 2 – pH-Modifying Sources

<input type="checkbox"/>	None
<input checked="" type="checkbox"/>	Bulk cement
<input type="checkbox"/>	Cement kiln dust
<input type="checkbox"/>	Fly ash
<input type="checkbox"/>	Other cementitious materials
<input checked="" type="checkbox"/>	New concrete washing or curing waters
<input type="checkbox"/>	Waste streams generated from concrete grinding and sawing
<input checked="" type="checkbox"/>	Exposed aggregate processes
<input type="checkbox"/>	Dewatering concrete vaults
<input checked="" type="checkbox"/>	Concrete pumping and mixer washout waters
<input type="checkbox"/>	Recycled concrete
<input type="checkbox"/>	Recycled concrete stockpiles
<input type="checkbox"/>	Other (i.e., calcium lignosulfate) [please describe:]

Describe BMPs you will use to prevent pH-modifying sources from contaminating stormwater.

List and describe BMPs:

BMP C154: Concrete Washout Area:

Provide a lined plastic pit for the concrete wash pit. Locate and construct as shown on the drawings. Water in the pit will be re-used as needed and decanted as needed. The pH of the water (BPM 252) will be adjusted before discharging to the existing vegetation to infiltrate into the site. Solid pieces of concrete will be periodically removed and disposed in a rollover container and then sent to an approved disposal facility.

Diversion Repair, Spillway Replacement and Bank Protection

BMP 252: High pH Neutralization using CO₂:

Dry ice or some other form of CO₂ will be used to neutralize the wash water if necessary.
Include detailed BMP

Detail: CO₂ gas injection system will be set up on discharge side of dewatering pumps that will convey water to ditch to sediment trap pond. Process will include measuring water for high pH, if pH is above 8.5, CO₂ gas will be injected into discharge side of pump hose and water shall be pumped to conveyance ditch. Water discharged into ditch shall be measured immediately for pH and depending on level of pH the flow valve on the CO₂ gas injection system will be adjusted to keep pH within range of 6.5 to 8.5.

BMP C253 pH Control of High pH Water:

pH control shall be by infiltration. A separate pit will be constructed near the washout area to decant the water from the solids and allow this to infiltrate back into the gravelly onsite soils.

Installation Schedules: August 2018

Inspection and Maintenance plan: See above

Responsible Staff: Lead CESCL or Site Engineer

Adjust pH of stormwater if outside the range of 6.5 to 8.5.

Obtain written approval from Ecology before using chemical treatment with the exception of CO₂ or dry ice to modify pH.

Concrete trucks must not be washed out onto the ground, or into storm drains, open ditches, streets, or streams. Excess concrete must not be dumped on-site, except in designated concrete washout areas with appropriate BMPs installed.

Will uncontaminated water from water-only based shaft drilling for construction of building, road, and bridge foundations be infiltrated provided the wastewater is managed in a way that prohibits discharge to surface waters?

☒ Yes ☐ No

If yes, provide BMPs to contain the wastewater during infiltration.

Wastewater that is contaminated will be pumped into the woods away from the river and allowed to flow overland as it infiltrates. A berm might be required to contain the water.

2.11. Element 10: Control Dewatering

Water is expected from the excavation in the river. Water is expected to be intercepted above and adjacent to the work area to avoid impact from construction. Water from foundations, vaults, and trenches with characteristics similar to stormwater runoff shall be discharged into a controlled conveyance system before discharging to a sediment trap or sediment pond or surface infiltration for a flat ditch. Clean dewatering water will not be routed through stormwater sediment ponds.

Only clean, non-turbid dewatering water (such as well-point groundwater) may be discharged to systems tributary to, or directly into, surface waters of the State, provided the dewatering flow does not cause erosion or flooding of receiving waters.

Groundwater is anticipated to be high and likely intercepted with the excavation for the bladder spillway foundation. A dewater sump will be installed at the bottom of the excavation. A diesel-powered pump will be located near the sump for pumping. The pump will be set with automatic levels and the suction will be floating off the surface. Water will be pumped to an infiltration trench downstream of the work area.

High turbidity water will be removed from the work site in a number of possible ways depending on the turbidity.

- The preferred method will be to convey the water in a nearly flat ditch with check dams to all the water to spread over sand and gravels to encourage infiltration. Silt fence check dams may be used to provide enhancement depending on operation.
- Pumping the water to a ditch for conveyance to the sedimentation pond. Check dams along the ditch should prevent high velocities. The sediment pond will be divided into multiple cells and have a controlled outlet leading to a ditch. Along the ditch silt fence check dams can be installed if necessary. If required water can be pumped to wooded area adjacent or uphill for dispersion.
- Before entry to the conveyance ditch sedimentation bags may be installed before discharge to the sediment pond.
- Monitoring will be required for any method with changes to maintain quality.

REFER to Water Quality Monitoring Plan for Sampling plan and detailed procedure.

Check treatment of disposal option for dewatering water, if applicable:

Table 3 – Dewatering BMPs

<input checked="" type="checkbox"/>	Infiltration
<input type="checkbox"/>	Transport off-site in a vehicle (vacuum truck for legal disposal)

Diversion Repair, Spillway Replacement and Bank Protection

<input type="checkbox"/>	Ecology-approved on-site chemical treatment or other suitable treatment technologies
<input type="checkbox"/>	Sanitary or combined sewer discharge with local sewer district approval (last resort)
<input checked="" type="checkbox"/>	Use of sedimentation bag with discharge to ditch or swale (small volumes of localized dewatering)

List and describe BMPs:

BMP C241: Temporary Sediment Pond:

A pond designed to allow sediment laden water flow at a low velocity to drop sediment. The pond surface area must exceed 2,200 square feet per 1 cfs of flow. The multiple-cell pond normally functions better with the first cell filling fastest. Monitoring is required to determine the sediment characteristics to determine adequacy of the pond.

BMP C206: Level Spreader:

Provide an outlet that provides a zero grade across the ground distributing water at a low flow to simulate sheet flow to area of vegetation for bio contact or infiltration. A weir board is normally used to distribute water over the ground.

BMP C236: Vegetated Filtration:

Water is distributed over the existing forest floor duff or vegetated ground to allow vegetation filtration and infiltration. Monitoring is required to verify runoff is not generated and is used with level spreaders and sediment traps.

Modified detail: Using sprinkler hose for increased distribution of water over existing forest floor duff or vegetated ground to reduce concentration of water flow and increase time for infiltration.

Installation Schedules: August 2018 and September 2020

Inspection and Maintenance plan: see above

Responsible Staff: Lead CESCL or Site Engineer

2.12. Element 11: Maintain BMPs

All temporary and permanent Erosion and Sediment Control (ESC) BMPs shall be maintained and repaired as needed to ensure continued performance of their intended function.

Maintenance and repair shall be conducted in accordance with each particular BMP specification (see *Volume II of the SWMMWW* or *Chapter 7 of the SWMMEW*).

Visual monitoring of all BMPs installed at the site will be conducted at least once every calendar week and within 24 hours of any stormwater or non-stormwater discharge from the site. If the site becomes inactive and is temporarily stabilized, the inspection frequency may be reduced to once every calendar month.

All temporary ESC BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed.

Trapped sediment shall be stabilized on-site or removed. Disturbed soil resulting from removal of either BMPs or vegetation shall be permanently stabilized.

Additionally, protection must be provided for all BMPs installed for the permanent control of stormwater from sediment and compaction. BMPs that are to remain in place following completion of construction shall be examined and restored to full operating condition. If sediment enters these BMPs during construction, the sediment shall be removed and the facility shall be returned to conditions specified in the construction documents.

List and describe BMPs:

BMP C160: Certified Erosion and Sediment Control Lead:

The project proponent designates at least one person as the responsible representative in charge of erosion and sediment control (ESC), and water quality protection. The designated person shall be the Certified Erosion and Sediment Control Lead (CESCL) who is responsible for ensuring compliance with all local, state, and federal erosion and sediment control and water quality requirements.

Installation Schedules: August 2018

Inspection and Maintenance plan: see above

Responsible Staff: Lead CESCL or Site Engineer

2.13. Element 12: Manage the Project

The project will be managed based on the following principles:

- Projects will be phased to the maximum extent practicable and seasonal work limitations will be taken into account.
- Inspection and monitoring:
 - Inspection, maintenance, and repair of all BMPs will occur as needed to ensure performance of their intended function.
 - Site inspections and monitoring will be conducted in accordance with Special Condition S4 of the CSWGP. Sampling locations are indicated on the Site Map. Sampling station(s) are in accordance with applicable requirements of the CSWGP.
- Maintain an updated SWPPP.
 - The SWPPP will be updated, maintained, and implemented in accordance with Special Conditions S3, S4, and S9 of the CSWGP.
 - Discuss the 2018, 2019, 2020 and 2020/10 versions.

As site work progresses the SWPPP will be modified routinely to reflect changing site conditions. The SWPPP will be reviewed at least monthly to ensure the content is current.

Diversion Repair, Spillway Replacement and Bank Protection

Table 4 – Management

<input checked="" type="checkbox"/>	Design the project to fit the existing topography, soils, and drainage patterns
<input checked="" type="checkbox"/>	Emphasize erosion control rather than sediment control
<input checked="" type="checkbox"/>	Minimize the extent and duration of the area exposed
<input checked="" type="checkbox"/>	Keep runoff velocities low
<input checked="" type="checkbox"/>	Retain sediment on-site
<input checked="" type="checkbox"/>	Thoroughly monitor site and maintain all ESC measures
<input checked="" type="checkbox"/>	Schedule major earthwork during the dry season
<input type="checkbox"/>	Other (please describe)

Table 5– BMP Implementation Schedule

Phase of Construction Project	Stormwater BMPs	Date	Wet/Dry Season
Construct Laydown and Staging areas	BMP C101, C102, C103, C107, C233	2018-2019	Dry
Construct cofferdam	C102, C140,	July 15, 2020	Dry
Initiate dewatering of work area	C253, C241	9/22/20 7/15/20	Dry
Form and pour concrete	C154, C253, C207	10/20	Dry Wet
Restore site	C120, BMP X-1000	9/15/20 →	Dry
	BMP C101, C102, C103, C105, C107, C120, C140, C151, C153, C154, C160, C207, C209, C220, C233, C235, C252, C253		

2.14. Element 13: Protect Low Impact Development (LID) BMPs

No Low-Impact Development facilities are proposed for the project. The existing biotreatment facility is not within the work area and equipment can not easily get to the swale and infiltration surface. It is maintained seasonally and will continue to be done as part of operation maintenance.

Diversion Repair, Spillway Replacement and Bank Protection

Table 4 – Management

<input checked="" type="checkbox"/>	Design the project to fit the existing topography, soils, and drainage patterns
<input checked="" type="checkbox"/>	Emphasize erosion control rather than sediment control
<input checked="" type="checkbox"/>	Minimize the extent and duration of the area exposed
<input checked="" type="checkbox"/>	Keep runoff velocities low
<input checked="" type="checkbox"/>	Retain sediment on-site
<input checked="" type="checkbox"/>	Thoroughly monitor site and maintain all ESC measures
<input checked="" type="checkbox"/>	Schedule major earthwork during the dry season
<input type="checkbox"/>	Other (please describe)

Table 5– BMP Implementation Schedule

Phase of Construction Project	Stormwater BMPs	Date	Wet/Dry Season
Construct Laydown and Staging areas	BMP C101, C102, C103, C107, C233	2018-2019	Dry
Construct cofferdam	C102, C140,	July 15, 2020	Dry
Initiate dewatering of work area	C253, C241	9/22/20 7/18/20	Dry
Form and pour concrete	C154, C253, C207	10/20	Dry Wet
Restore site	C120, BMP X-1000	7/15/20 →	Dry
	BMP C101, C102, C103, C105, C107, C120, C140, C151, C153, C154, C160, C207, C209, C220, C233, C235, C252, C253		

No 2.14. Element 13: Protect Low Impact Development (LID) BMPs

No Low-Impact Development facilities are proposed for the project. The existing biotreatment facility is not within the work area and equipment can not easily get to the swale and infiltration surface. It is maintained seasonally and will continue to be done as part of operation maintenance.

2.15. Pollution Prevention Team

Table 6 – Team Information

Title	Name(s)	Phone Number
Certified Erosion and Sediment Control Lead (CESCL)	Corey Kleppe Steven P. Goodrich	360-202-0245
Resident Engineer	Thom Fischer	360-739-9777
Emergency Ecology Contact	Chris Spens	360-746-3435
Emergency Permittee/ Owner Contact	Thom Fischer	360-739-9777
Non-Emergency Owner Contact	Corey Alefteras	360-761-1602
Monitoring Personnel	Mallory Voyk	360-761-1588
Ecology Regional Office	Northwest Regional Office	425-649-7000

2.16. Monitoring and Sampling Requirements

Monitoring procedures, frequency and reporting procedures are laid out in the WQMP which includes visual inspection, sampling for water quality parameters of concern, and documentation of the inspection and sampling findings in a site logbook. A site logbook is maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements
- Site inspections with daily activities
- Stormwater sampling data

The Construction Stormwater Site Inspection Form for the project is provided in Appendix D.

The site logbook is maintained within reasonable access to the site on paper and electronically and is available upon request to Ecology or the local jurisdiction.

Numeric effluent limits may be required for certain discharges to 303(d) listed waterbodies. See CSWGP Special Condition S8 and Section 5 of this template.

2.17. Site Inspection

Site inspections are conducted on a continuous basis with submittals made daily, weekly and monthly. After construction season they will be done at least once every calendar month and, within 24 hours following any discharge from the site or major precipitation event. After the

Diversion Repair, Spillway Replacement and Bank Protection

construction season the site will be temporarily stabilized and inactive, the frequency is reduced to once per calendar month.

The discharge point(s) are indicated on the Site Map (see Appendix A) and in accordance with the applicable requirements of the CSWGP.

A daily log of activities will be maintained describing the general conditions, weather, work under way site maintenance items to review, planned activities and work completed. Photos are acceptable to represent activities but must be available at the construction site on paper or electronically.

2.18. Stormwater Quality Sampling

2.19. Turbidity Sampling

Requirements include calibrated turbidity meter or transparency tube to sample site discharges for compliance with the CSWGP. Sampling will be conducted at all discharge points at least once per calendar week.

Method for sampling turbidity:

Table 7 – Turbidity Sampling Method

<input checked="" type="checkbox"/>	Turbidity Meter/Turbidimeter (required for disturbances 5 acres or greater in size)
<input type="checkbox"/>	Transparency Tube (option for disturbances less than 1 acre and up to 5 acres in size)

The benchmark for turbidity value is 25 nephelometric turbidity units (NTU) and a transparency less than 33 centimeters.

If the discharge's turbidity is 26 to 249 NTU or the transparency is less than 33 cm but equal to or greater than 6 cm, the following steps will be conducted:

1. Review the SWPPP for compliance with Special Condition S9. Make appropriate revisions within 7 days of the date the discharge exceeded the benchmark.
2. Immediately begin the process to fully implement and maintain appropriate source control and/or treatment BMPs as soon as possible. Address the problems within 10 days of the date the discharge exceeded the benchmark. If installation of necessary treatment BMPs is not feasible within 10 days, Ecology may approve additional time when the Permittee requests an extension within the initial 10-day response period.
3. Document BMP implementation and maintenance in the site logbook.

If the turbidity exceeds 250 NTU or the transparency is 6 cm or less at any time, the following steps will be conducted:

1. Telephone or submit an electronic report to the applicable Ecology Region's Environmental Report Tracking System (ERTS) within 24 hours.
 - **Southwest Region** (Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, Wahkiakum,): (360) 407-6300 or http://www.ecy.wa.gov/programs/spills/forms/nerts_online/SWRO_nerts_online.html

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2. Immediately begin the process to fully implement and maintain appropriate source control and/or treatment BMPs as soon as possible. Address the problems within 10 days of the date the discharge exceeded the benchmark. If installation of necessary treatment BMPs is not feasible within 10 days, Ecology may approve additional time when the Permittee requests an extension within the initial 10-day response period
3. Document BMP implementation and maintenance in the site logbook.
4. Continue to sample discharges daily until one of the following is true:
 - Turbidity is 25 NTU (or lower).
 - Transparency is 33 cm (or greater).
 - Compliance with the water quality limit for turbidity is achieved.
 - 1 - 5 NTU over background turbidity, if background is less than 50 NTU
 - 1% - 10% over background turbidity, if background is 50 NTU or greater
 - The discharge stops or is eliminated.

2.20. pH Sampling

pH monitoring is required for "Significant concrete work" (i.e., greater than 1000 cubic yards poured concrete over the life of the project). The use of recycled concrete or engineered soils (soil amendments including but not limited to Portland cement-treated base [CTB], cement kiln dust [CKD] or fly ash) also requires pH monitoring.

For significant concrete work, pH sampling will start the first day concrete is poured and continue until it is cured, typically three (3) weeks after the last pour.

For engineered soils and recycled concrete, pH sampling begins when engineered soils or recycled concrete are first exposed to precipitation and continues until the area is fully stabilized.

If the measured pH is 8.5 or greater, the following measures will be taken:

1. Prevent high pH water from entering storm sewer systems or surface water.
2. Adjust or neutralize the high pH water to the range of 6.5 to 8.5 using appropriate technology such as carbon dioxide (CO₂) sparging (liquid or dry ice).
3. Written approval will be obtained from Ecology prior to the use of chemical treatment other than CO₂ sparging or dry ice.

Method for sampling pH:

Check the analysis method you will use:

Table 8 – pH Sampling Method

<input type="checkbox"/>	pH meter
<input checked="" type="checkbox"/>	pH test kit
<input type="checkbox"/>	Wide range pH indicator paper

2.21. Discharges to 303(d) or Total Maximum Daily Load (TMDL) Waterbodies

2.22. 303(d) Listed Waterbodies

Circle the applicable answer, if necessary:

Is the receiving water 303(d) (Category 5) listed for turbidity, fine sediment, phosphorus, or pH?

☐ Yes ☒ No

List the impairment(s):

If yes, discharges must comply with applicable effluent limitations in S8.C and S8.D of the CSWGP.

2.23. TMDL Waterbodies

There are no TMDL waterbodies in the vicinity of the project.

2.24. Reporting and Record Keeping
2.25. Record Keeping

Reporting and records must be maintained for the project.

2.26. Site Logbook

A site logbook will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements
- Site inspections
- Sample logs
- Construction activity on the site.

2.27. Records Retention

Records will be retained during the life of the project and for a minimum of three (3) years following the termination of permit coverage in accordance with Special Condition S5.C of the CSWGP.

Permit documentation to be retained on-site:

- CSWGP
- Permit Coverage Letter
- SWPPP
- Site Logbook

Permit documentation will be provided within 14 days of receipt of a written request from Ecology. A copy of the SWPPP or access to the SWPPP will be provided to the public when requested in writing in accordance with Special Condition S5.G.2.b of the CSWGP.

2.28. Updating the SWPPP

The SWPPP will be modified if:

- Found ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site.
- There is a change in design, construction, operation, or maintenance at the construction site that has, or could have, a significant effect on the discharge of pollutants to waters of the State.

The SWPPP will be modified within seven (7) days if inspection(s) or investigation(s) determine additional or modified BMPs are necessary for compliance. An updated timeline for BMP implementation will be prepared.

2.29. Reporting
2.30. Discharge Monitoring Reports

Select and retain applicable paragraph.

Cumulative soil disturbance is one (1) acre or larger; therefore, Discharge Monitoring Reports (DMRs) will be submitted to Ecology monthly. If there was no discharge during a given

monitoring period the DMR will be submitted as required, reporting "No Discharge". The DMR due date is fifteen (15) days following the end of each calendar month.

DMRs will be reported online through Ecology's WQWebDMR System.

2.31. Notification of Noncompliance

If any of the terms and conditions of the permit is not met, and the resulting noncompliance may cause a threat to human health or the environment, the following actions will be taken:

1. Ecology will be notified within 24-hours of the failure to comply by calling the applicable Regional office ERTS phone number (Regional office numbers listed below).
2. Immediate action will be taken to prevent the discharge/pollution or otherwise stop or correct the noncompliance. If applicable, sampling and analysis of any noncompliance will be repeated immediately, and the results submitted to Ecology within five (5) days of becoming aware of the violation.
3. A detailed written report describing the noncompliance will be submitted to Ecology within five (5) days, unless requested earlier by Ecology.

Anytime turbidity sampling indicates turbidity is 250 NTUs or greater, or water transparency is 6 cm or less, or if the background turbidity is greater than 50 NTUs and discharge sample(s) NTUs are greater than 10% above background, the Ecology Regional office will be notified by phone within 24hours of analysis as required by Special Condition S5.A of the CSWGP and Washington state RCW.

- **Southwest Region** at (360) 407-6300 for Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, or Wahkiakum

Include the following information:

1. Your name and / Phone number
2. Permit number
3. City / County of project
4. Sample results
5. Date / Time of call
6. Date / Time of sample
7. Project name

In accordance with Special Condition S4.D.5.b of the CSWGP, the Ecology Regional office will be notified if chemical treatment other than CO₂ sparging is planned for adjustment of high pH water.